Assignment #5. QIT. Part 1. Due Weds 3/2.

1. (2 pt.) In your own words, describe the essential differences between a qubit and a classical bit.

2. (2 pt.) How might you argue that quantum information is not essentially different from classical information? How might you argue that quantum information is essentially different from classical information?

3. (3 pt.) Why does the literal interpretation of superpositions entail that a qubit encodes an arbitrarily large amount of information, of which only 1 classical bit's worth is accessible?

4. (3 pt.) In your own words, explain *precisely* what is meant by the claim that *unknown* qubits cannot be cloned. Why is the claim restricted to *unknown* qubits?